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VASHCHENKO, D.M.

Wild carp as food of pike in Kakhovka Reservoir during its first year of existence [with summary in English]. Zool. zhur. 37 no.11: 1745-1748 N '58. (MIRA 11:12)

1.Nauchno-issledovatel'skiy institut prudovogo i ozerno-rechnogo rybnogo khozyaystva (Kiyev).
(Kakhovka Reservoir--Carp)
(Kakhovka Reservoir--Pike)
(Fishes--Food)

VASHCHENKO, D.M.

Reproduction of crucian carp in Kakhovka Reservoir. Zool. zhur. 40 no.5:725-279 '61. (MIRA 14:5)

1. Ukrainian Research Institut of Fishery Management, Kiyev. (Kakhovka Reservoir--Carp)

VASHCHENKO, D.M.

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1. Ukrainskiy nauchno-issledovatel'skiy institut rybnogo khozyaystva, Kiyev.

(Dnieper River--Fishes)

VASHCHENKO, D.M.

Effect of pike on the wild carp stock in Kremenchug Reservoir.
Zool.zhur. 41:no.11:1749-1751 N '62. (MIRA 16:1)

1. Ukranian Research Institute of Fishery Management, Kiyev.
(Kremenchug Reservoir--Carp)
(Kremenchug Reservoir--Pike)

VASHCHENKO, D. M., PAVLOVICH, N. V., TERENETSKOY, M. K., SHIMKO, I. G., FISHMAN, Ts. E. and TRETYAKOV, V. I.

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KALININ, Mikhail Ivanovich(1875-1946); VASHCHENKO, F.G.; ZHMUDSKAYA, R.M., kand. med. nauk; PASHENTSEV, I.A., red.; BALDINA, N.F., tekhn. red.

[Public health and medicine]O zdravookhranenii i meditsine. Moskva, Medgiz, 1962. 170 p. (MIRA 15:10)
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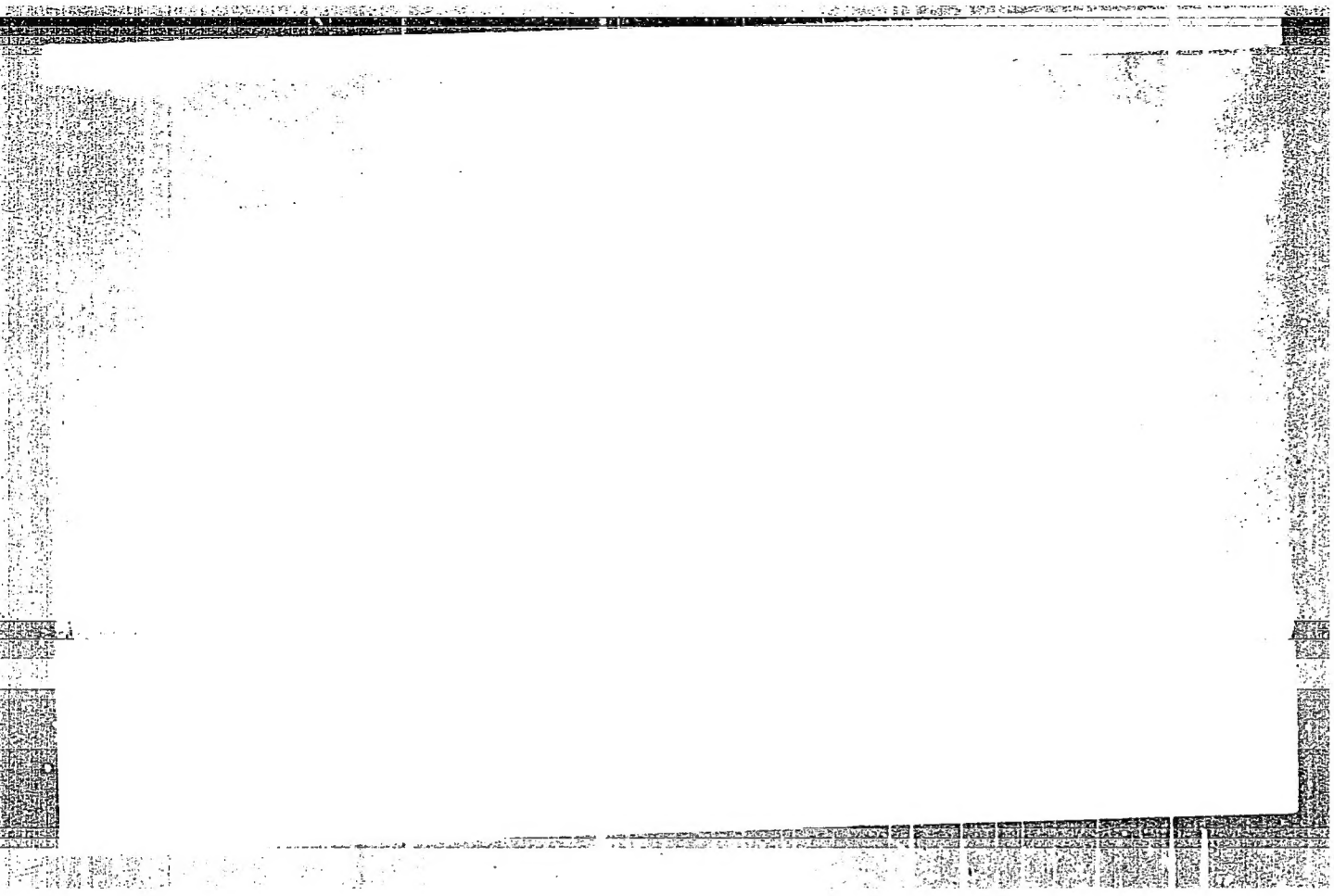
(KALININ, MIKHAIL IVANOVICH, 1875-1946).



APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858720008-2"

BABIN, P.U.; KARLYSHEV, B.N.; AVER'YANOV, V.A.; VASHCHENKO, F.I.; YATSOVSKIY, S.A.

Using Chinese metallurgical magnesite in hot repair of the bottoms of open-hearth furnaces. Vest. AN Kazakh. SSR 13 no.3:79-86 Mr '57. (MLRA 10:6)

1. Institut stroitel'stva i stroitel'nykh materialov Akademii nauk Kazakhskoy SSR (for Babin and Karlyshev). 2. Kazakhskiy metallurgicheskiy zavod (for Aver'yanov, Vashchenko and Yatsovskiy).
(Open-hearth furnaces--Repairing) (Magnesite)

BABIN, Pavel Nikolayevich, kand.tekhn.nauk; ZUBAKOV, Sergey Mikhaylovich, kand.tekhn.nauk; AVER'YANOV, Veniamin Aleksandrovich, inzh.; VASHCHENKO, Fedor Il'ich, starshiy master; KUNAYEV, Vyacheslav Gavrilovich; EPOV, Georgiy Agafonovich, inzh.; BYCHKOV, Fedor Nikolayevich; DANIL'CHENKO, Mikhail Pavlovich; GOTS, Stepan Nikolayevich; ZHUKOVA, N.D., red.; ALFEROVA, P.F., tekhn.red.

[Work practices of the Kazakh Steel Mill] Iz opyta raboty Kazakhskogo metallurgicheskogo zavoda. Alma-Ata, Izd-vo Akad. nauk Kazakhskoi SSR, 1960. 112 p. (MIRA 13:12)

1. TSentral'naya laboratoriya Kazakhskogo metallurgicheskogo zavoda (for Kunayev). 2. Nachal'nik martenovskogo tsekha Kazakhskogo metallurgicheskogo zavoda (for Epov). 3. Inzhenerno-tekhnicheskiye rabotniki prokatnogo tsekha Kazakhskogo metallurgicheskogo zavoda (for Bychkov, Danil'chenko, Gots).
(Kazakhstan--Steel industry)

ZABRODIN, D.M., kand.istorich.nauk; KALYUZHNAYA, N.K.; MAYSTRENKO,L.F.; MYSNICHENKO, V.P.; PAKHNIN, Ye.I.; SHAPOVAL, A.P.; VASHCHENKO,G.I., red.; KAMINSKIY, L.N., red.; LIMANOVA, M.I., tekh.red (MIRA 16:6)

[Work and live the communist way, 1958-1962] Rabotat' i zhit' po kommunisticheski; 1958-1962. Sbornik dokumentov i materialov. Khar'kov, Khar'kovskoe knizhnoe izd-vo, 1963. 250 p. (MIRA 16:6)

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(Kharkov--Efficiency, Industrial)

VASHCHENKO, G. S.

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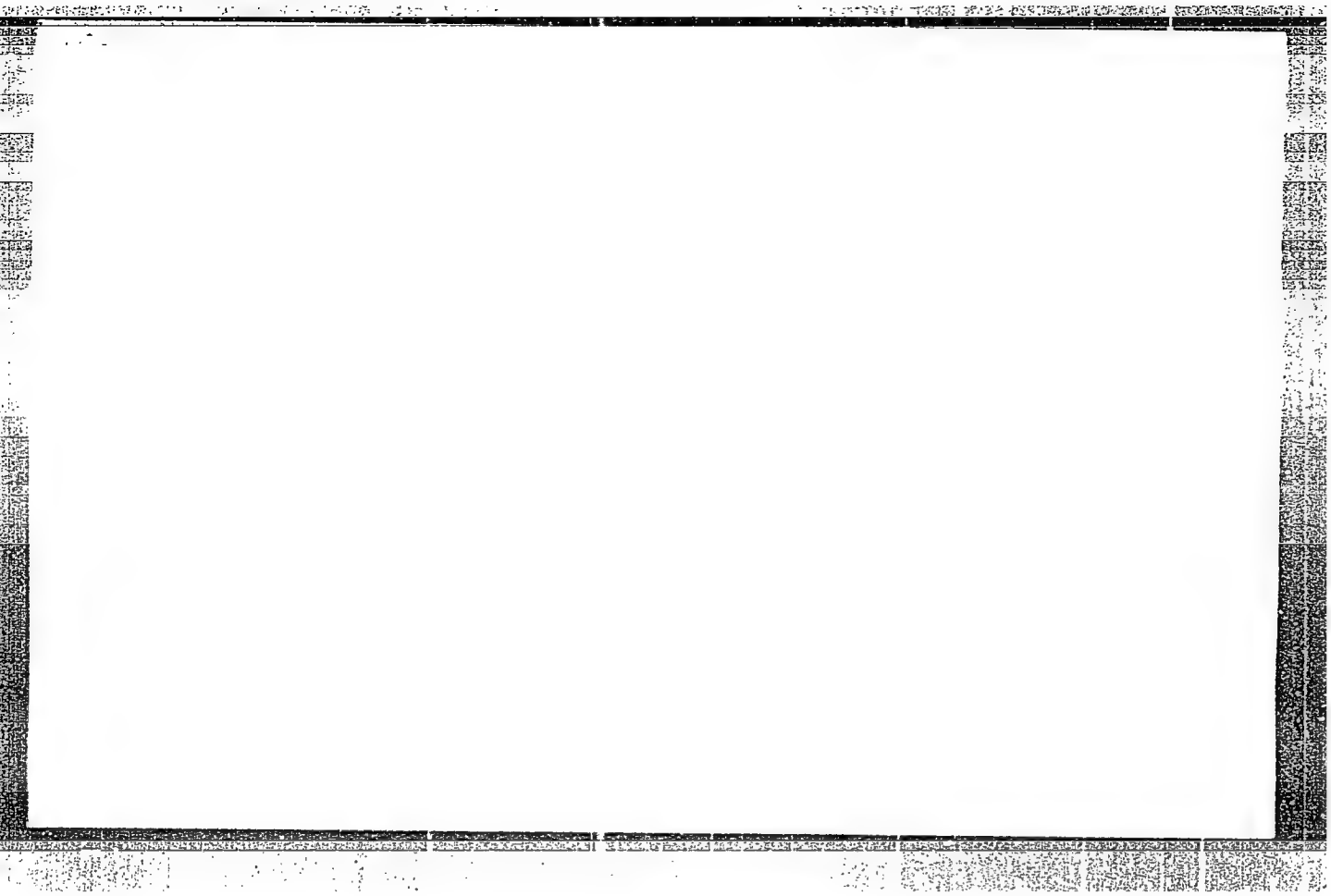

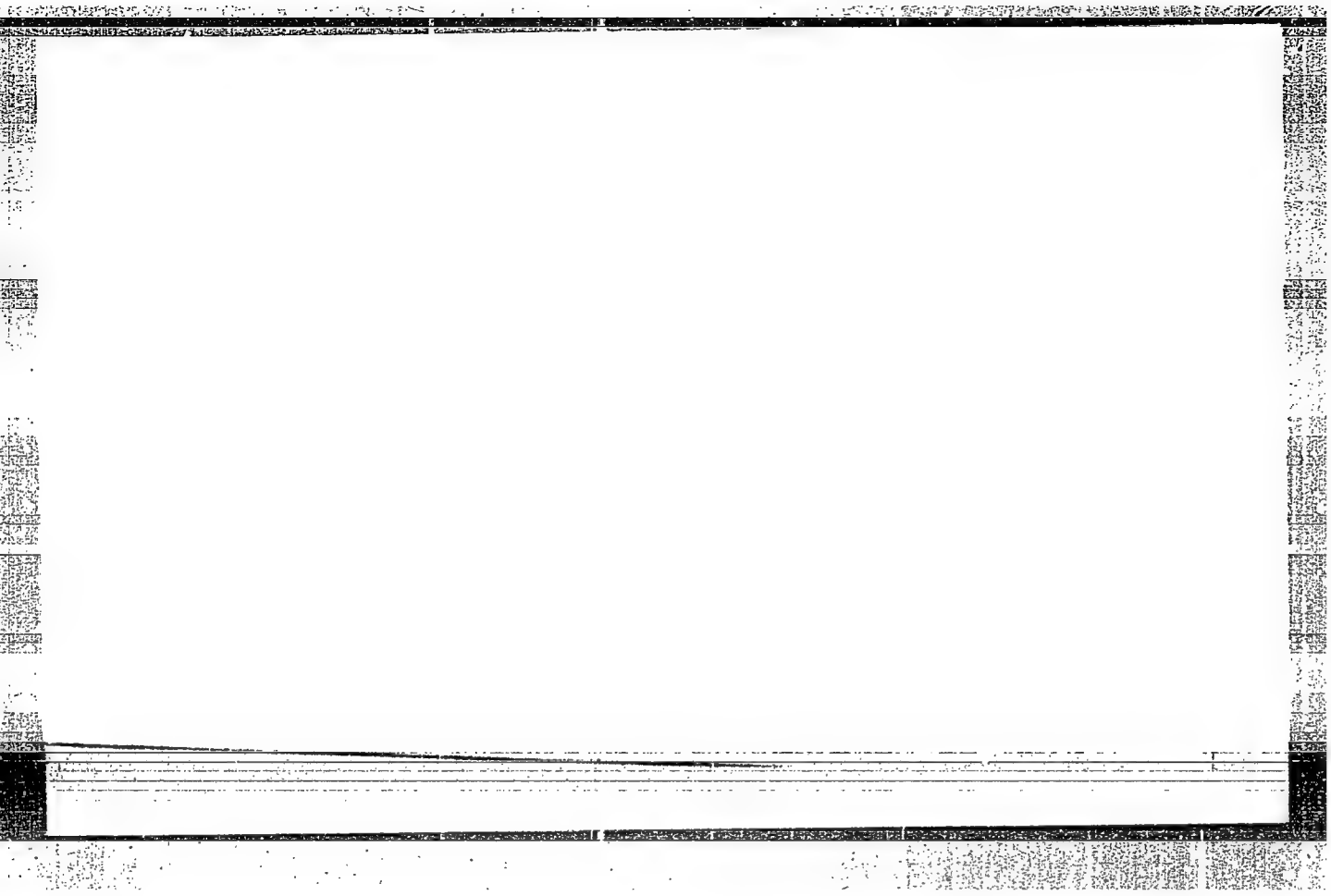

APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R001858720008-2"

GORGIYEV, Tigran Borisovich; VASHCHENKO, Galina Sergeyevna

[Epidemic hepatitis (Botkin's disease)] Epidemicheskii gepatit (bolezn' Botkina). Moskva, Medgiz, 1960. 15 p. (MIRA 13:11)

(HEPATITIS, INFECTIOUS)

USSR / Cultivated Plants. Grains. M-3

Abs Jour: Ref Zhur-Biol., 1958, No 16, 72929.

Author : Vashchenko, I.
Inst : Moscow Agricultural Academy imeni K. A. Timiryazev.
Title : Influence of Preplanting Seed Treatment on the Growth, Development and Harvest of Corn.

Orig Pub: Sb. stud. nauchno-issled. rabot Mosk. s.-kh. akad. im. K. A. Timiryazeva, 1958, vyp. 8, 75-81.

Abstract: No abstract.

Card 1/1

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Konstantin Konstantinovich Skvortsov; obituary. Nov.khir.arkh. no.3:142-143 My-Je '59. (MIRA 12:10)
(SKVORTSOV, KONSTANTIN KONSTANTINOVICH, 1871-1959)

Vashchenko I I

VASHCHENKO, I.I.; KUSOV, N.I.

"Methods of geological surveying in prospecting for fossil deposits." Reviewed by I.I. Vashchenko, N.I. Kusov. Razved. i okh. nedr 23 no.6: 59-62 Je '57. (MIRA 11:2)

1. Moskovskiy gosudarstvennyy universitet (for Vashchenko). 2. Glavsevmorput' (for Kusov).

(Coal geology)

VASHCHENKO, I.I.

Conditions governing the accumulation of the Lena and Olenek coal-bearing series in the Lena Delta. Trudy NIIGA 107:98-115 '59 (MIRA 13:3)
(Lena Valley--Coal geology)
(Olenek Valley--Coal geology)

VASHCHENKO, I.I.

Some recent data on the conditions of the formation of Iukuway strata of the Olenek coal-bearing series on the left bank of the Olenek and Bulkurskaya arms of the Lena Delta. Vest. Mosk. un. Ser. biol., pochv., geol., geog., 14 no.3:123-128 '59. (MIRA 13:6)

1. Kafedra goryuchikh iskopayemykh Moskovskogo universiteta.
(Lena Delta region--Geology, Stratigraphic)

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VASHCHENKO, I.I.

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1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Lena Valley--Geology, Stratigraphic)

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Petrographic types and conditions governing the formation of Cretaceous coal-bearing sediments in the Olenek region of the Lena coal-bearing basin. Biul.MOIP.Otd.geol. 35 no.2:158 Mr-Ap '60. (MIRA 14:4)

(Olenek Valley--Coal geology)

VASHCHENKO, I.I.

Basic characteristics of the lithology, coal potential, and paleogeographical conditions of the accumulation of the coal-bearing series of Cretaceous sediments in the lower reaches of the Lena and Olenek. Izv.vys.ucheb.zav.; geol. i razv. 7 no.3: 15-23 Mr '64. (MIRA 18:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.

VASHCHENKO, I.I.; KUDRYAVTSEV, M.N.; CHEREPANOV, Ye.D.; KLIMINA, [redacted] P.F., red.; CS'KINA, V.A., tekhn. red.

[Designing highway lay-out] Proektirovanie trassy avtomobil'nykh dorog. Omsk, Omskoe knizhnoe izd-vo, 1961. 103 p. (MIRA 16:9)

(Road--Design)

VASHCHENKO, I.I., inzh.

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VASHCHENKO, I.M.

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1. Rekomendovana kafedroy fiziki i [illegible] gosudarstvennogo universiteta im. N.V. [illegible]
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SO: Monthly Index of East European Accessions (EEAI) LC. Vol. 7, no. 4, April 1958

RUSANOV, A.A., prof.; VASHCHENKO, K.A.

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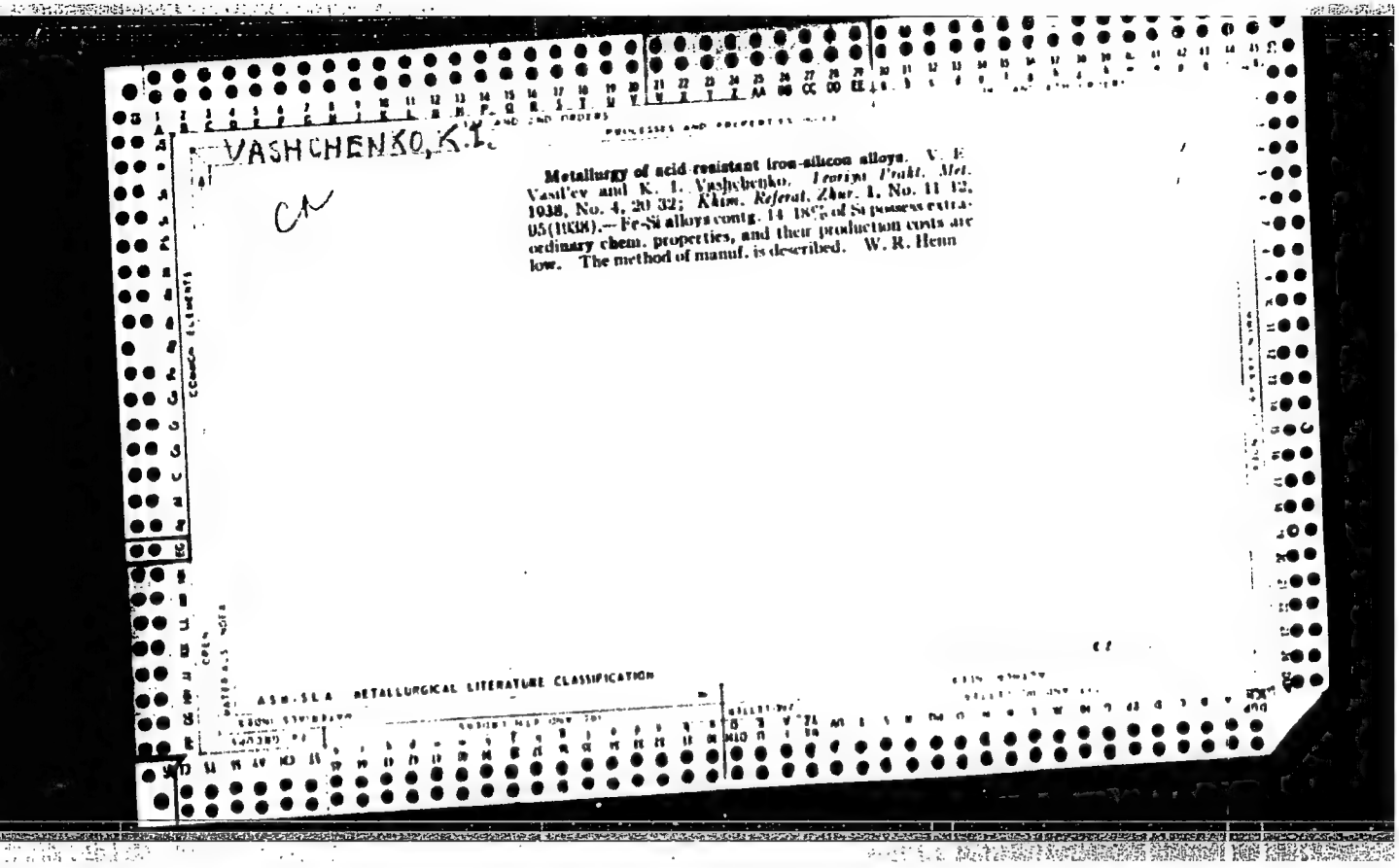
1. Iz fakul'tetskoy khirurgicheskoy kliniki (zav. - prof. A.A. Rusanov) Leningradskogo pediatricheskogo meditsinskogo instituta.

VASHCHENKO, K.A. (Leningrad, Gatchinskaya ul., d.12, kv.19); TIKHOMIROV, V.A.

Bilateral dislocation of the leg. Ortop. travm.i protez. 22 no.1: 73-74 Ja '61. (MIRA 14:5)

1. Iz Leningradskogo nauchno-issledovatel'skogo instituta skoroy pomoshchi imeni Dzhanelidze (dir. - dotsent S.N.Polikarpov).
(KNEE--DISLOCATION)

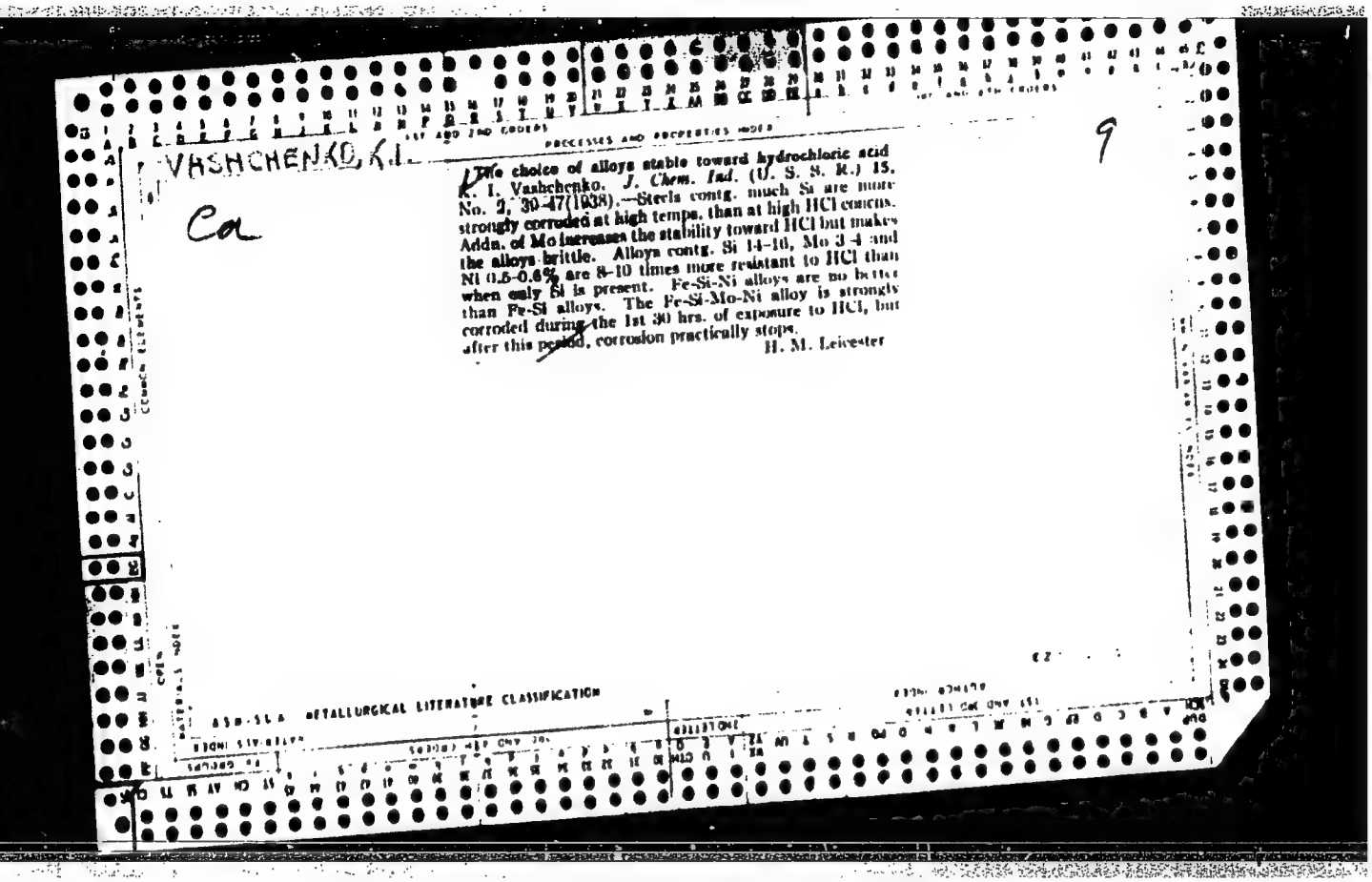


VASHCHENKO, K.I.

CM

Metallurgy of acid resistant iron-silicon alloys. V. E. Vasil'ev and K. I. Vashchenko. *Tsvetn. Metall. Met.* 1938, No. 4, 20-32; *Khim. Referat. Zhur.* 1, No. 11-12, 105(1938).—Fe-Si alloys contg. 14-18% of Si possess extraordinary chem. properties, and their production costs are low. The method of manuf. is described. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



VASHCHENKO, K. I.

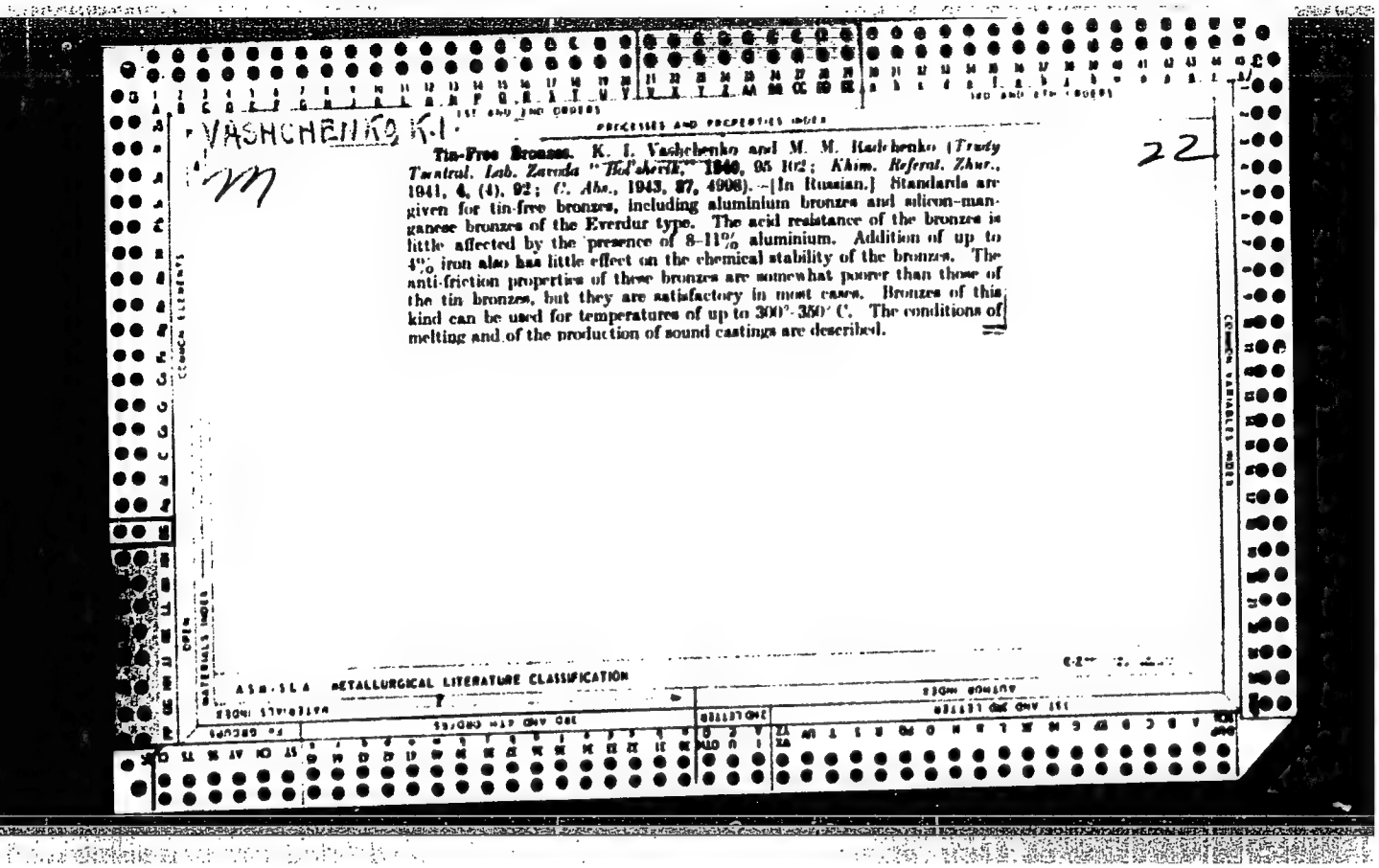
Ca

9

The choice of alloys stable toward hydrochloric acid. K. I. Vashchenko. *J. Chem. Ind.* (U. S. S. R.) 15, No. 2, 30-47(1938).—Steels contg. much Si are more strongly corroded at high temps. than at high HCl concns. Addn. of Mo increases the stability toward HCl but makes the alloys brittle. Alloys contg. Si 14-16, Mo 3-4 and Ni 0.5-0.6% are 8-10 times more resistant to HCl than when only Si is present. Fe-Si-Ni alloys are no better than Fe-Si alloys. The Fe-Si-Mo-Ni alloy is strongly corroded during the 1st 30 hrs. of exposure to HCl, but after this period, corrosion practically stops.

H. M. Leicester

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

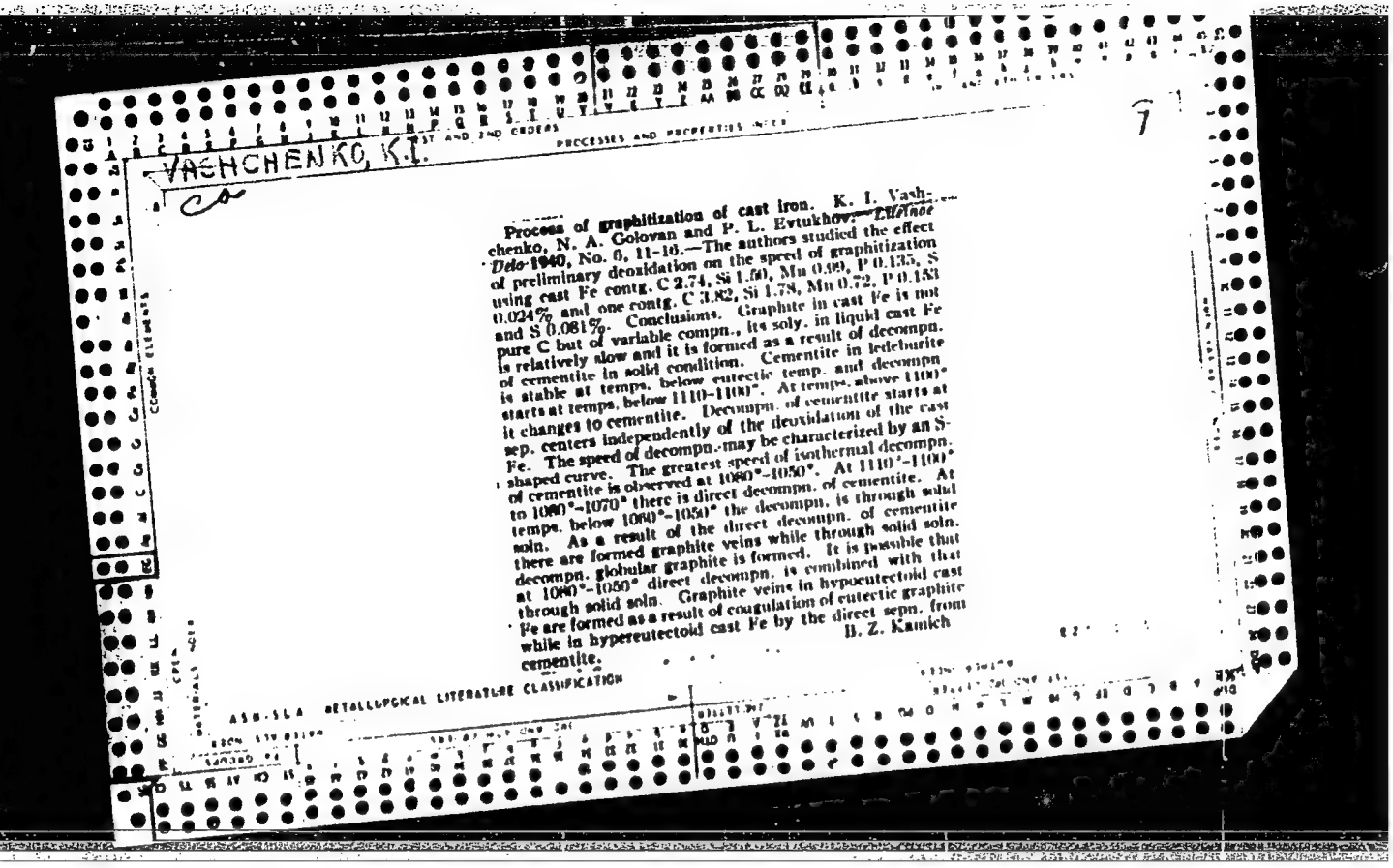


VASHCHENKO K.I.

22

Tin-Free Bronzes. K. I. Vashchenko and M. M. Radchenko (*Trudy Tsentral. Lab. Zavoda "Elektrik,"* **1940**, 95 102; *Khim. Referat. Zhur.*, 1941, **4**, (4), 92; *C. Abs.*, 1943, **37**, 4908).—[In Russian.] Standards are given for tin-free bronzes, including aluminium bronzes and silicon-manganese bronzes of the Everdur type. The acid resistance of the bronzes is little affected by the presence of 8–11% aluminium. Addition of up to 4% iron also has little effect on the chemical stability of the bronzes. The anti-friction properties of these bronzes are somewhat poorer than those of the tin bronzes, but they are satisfactory in most cases. Bronzes of this kind can be used for temperatures of up to 300°-350° C. The conditions of melting and of the production of sound castings are described.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

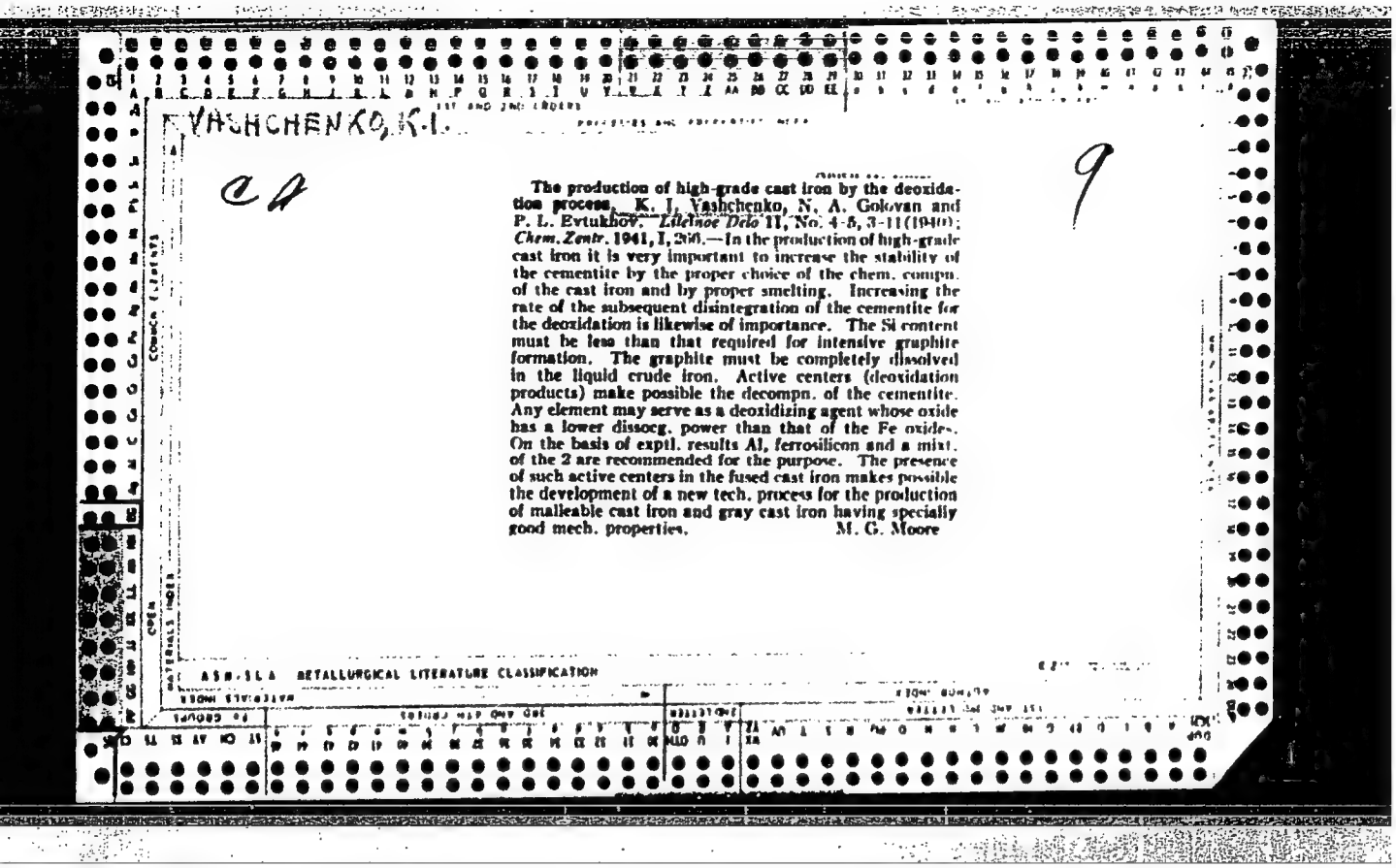


VASHCHENKO, K.I.

Process of graphitization of cast iron. K. I. Vashchenko, N. A. Golovan and P. L. Evtukhov. *Liteinoe Delo* 1940, No. 6, 11–16.—The authors studied the effect of preliminary deoxidation on the speed of graphitization using cast Fe contg. C 2.74, Si 1.50, Mn 0.89, P 0.135, S 0.024% and one contg. C 3.82, Si 1.78, Mn 0.72, P 0.153 and S 0.081%. Conclusions. Graphite in cast Fe is not pure C but of variable compn., its soly. in liquid cast Fe is relatively slow and it is formed as a result of decompn. of cementite in solid condition. Cementite in ledeburite is stable at temps. below eutectic temp. and decompn starts at temps. below 1110–1100°. At temps. above 1100° it changes to cementite. Decompn. of cementite starts at sep. centers independently of the deoxidation of the cast Fe. The speed of decompn. may be characterized by an S-shaped curve. The greatest speed of isothermal decompn. of cementite is observed at 1080°–1050°. At 1110°–1100° to 1080°–1070° there is direct decompn. of cementite. At temps. below 1060°–1050° the decompn. is through solid soln. As a result of the direct decompn. of cementite there are formed graphite veins while through solid soln. decompn. globular graphite is formed. It is possible that at 1080°–1050° direct decompn. is combined with that through solid soln. Graphite veins in hypoeutectoid cast Fe are formed as a result of coagulation of eutectic graphite while in hypereutectoid cast Fe by the direct sepn. from cementite.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



VASHCHENKO, K. I.

CA

9

The production of high-grade cast iron by the deoxidation process. K. I. Vashchenko, N. A. Golovan and P. L. Evtukhov. *Liteinoe Delo* 11, No. 4-5, 3-11 (1940); *Chem. Zentr.* 1941, I, 236.—In the production of high-grade cast iron it is very important to increase the stability of the cementite by the proper choice of the chem. compn. of the cast iron and by proper smelting. Increasing the rate of the subsequent disintegration of the cementite for the deoxidation is likewise of importance. The Si content must be less than that required for intensive graphite formation. The graphite must be completely dissolved in the liquid crude iron. Active centers (deoxidation products) make possible the decompn. of the cementite. Any element may serve as a deoxidizing agent whose oxide has a lower dissocg. power than that of the Fe oxides. On the basis of exptl. results Al, ferrosilicon and a mixt. of the 2 are recommended for the purpose. The presence of such active centers in the fused cast iron makes possible the development of a new tech. process for the production of malleable cast iron and gray cast iron having specially good mech. properties. M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

VASHCHENKO, K.I.; GOLOVAN', N.A.

Effect of silicon on the diffusion of magnesium in cast iron. Lit. proizv. no.2:27-28 F '60. (MIRA 13:5)
(Diffusion) (Cast iron--Metallography)

VASHCHENKO, K.I.; IVANOV, D.P.

"Science of metals" [in Czech] by F.Pisek. Reviewed by K.I. Vashchenko, D.P.Ivanov. Lit.proizv. no.2:48 F '60. (MIRA 13:5)

(Metals) (Pisek, F.)

VASHCHENKO, K.I.

[Inoculated cast iron] Modifitsirovannyi chugun. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1946. 229 p. (MLRA 8:12)
(Cast iron)

1. VASHCHENKO, K. I.: AVRINSKIY, P. V.: NESELOVSKIY, V. L.

2. USSR (600)

4. Iron founding

7. Peculiarities in casting parts from cast iron processed with magnesium. Lit. proiz., No.10, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

NOSKOV, B.A.; VASHCHENKO, K.I., professor, doktor tekhnicheskikh nauk, redaktor; RUDENSKIY, Ya.V., tekhnicheskiy redaktor

[Manufacture of cast drop-forging dies] Proizvodstvo litykh molotovykh shtampov. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1953. 97 p. [Microfilm] (MLRA 7:10)
(Steel castings)
(Dies (Metalworking))

VASHCHENKO, K. I.

Journal of Applied Chemistry
June 1954
Industrial Inorganic Chemistry

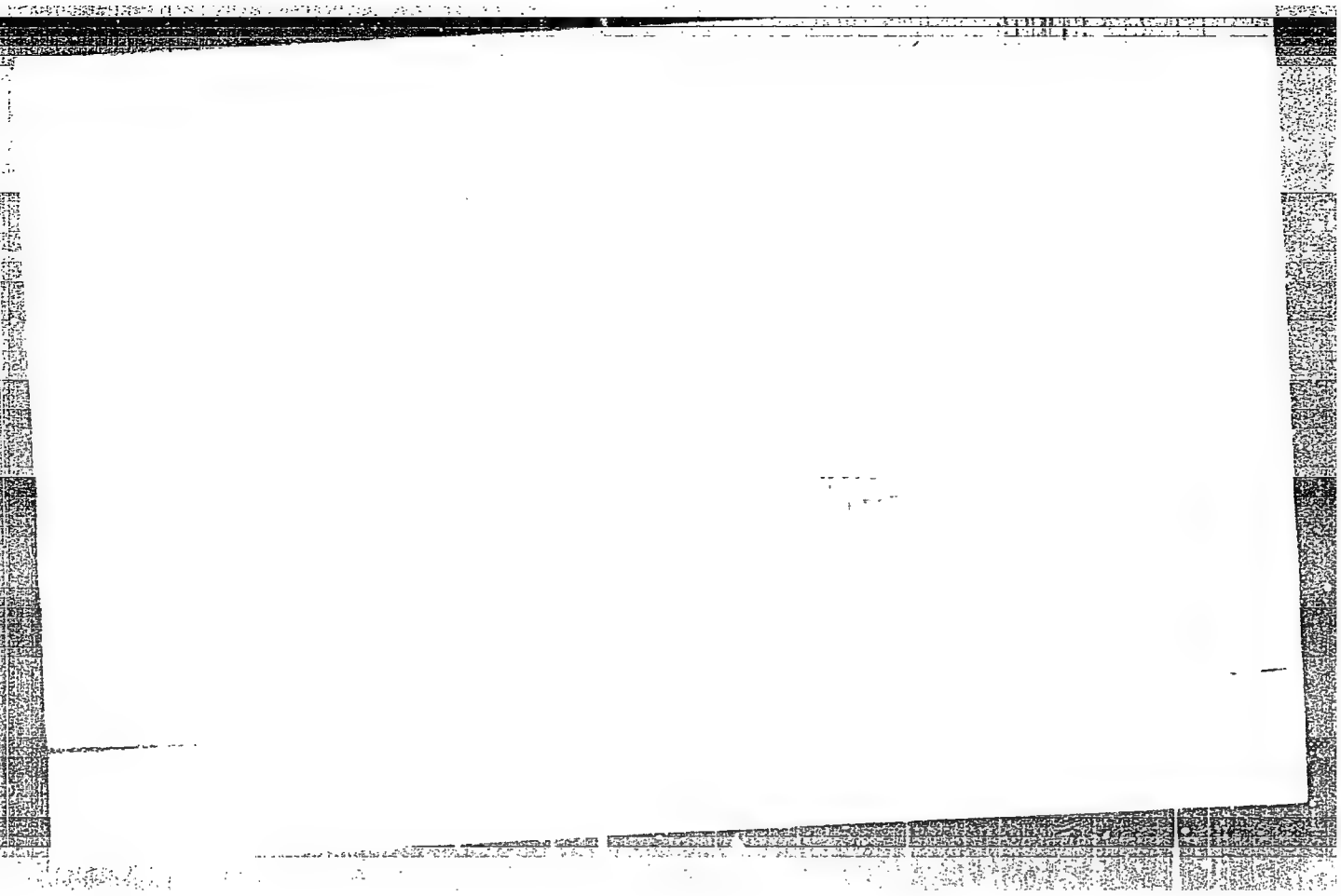
(3)

Technology of producing cast iron treated with magnesium. K. I. Vashchenko, P. G. Berezin, and A. N. Firstov (*Liteinoe Proizvodstvo*, 1953, 8, No. 1, 18—21).—After a review of factors in nodular cast iron production and utilisation which require study, the addition of Mg and its alloys to cast iron is considered in detail. Russian techniques for carrying out Mg additions are critically reviewed from the aspects of effectiveness, temp. drop, and safety. Data are given on the effects of S, Mn, and Si, and the hardness and form of graphite in nodular irons containing 0·010—0·052% of Mg are compared. The harmful effects of P are capable of mitigation by suitable heat-treatment.

J. Iron Steel Inst. (B.I.S.C.).

VASILENKO, A.A., redaktor; VASHCHENKO, K.I., redaktor; GRIGOR'YEV, I.S., redaktor; SHREDENKO, B.N., redaktor; YAYNERMAN, I.D., redaktor; SOROKA, M., redaktor; RUDENSKIY, Ya., tekhredaktor

[High-strength cast iron] Vysokoprochnye chuguny. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, Ukrainskoe otd-nie, 1954. 303 p. (MLRA 8:3)
[Microfilm]
(Cast iron)

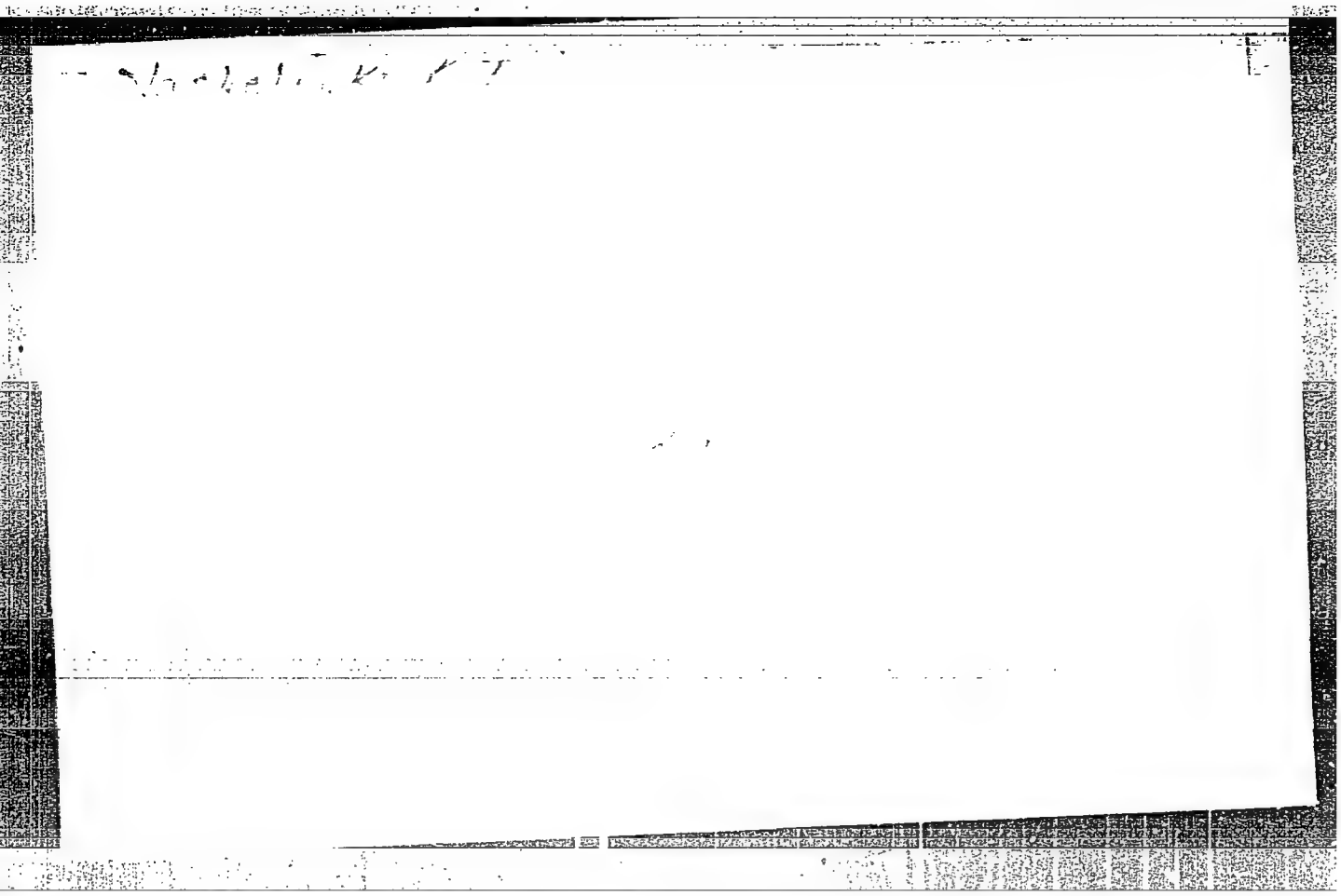


VASHCHENKO, K.I.

Desulfurization during the treatment of cast iron with magnesium. K. I. Vashchenko, P. V. Avrinskii, and B. M. Pashkovskii. *Liteinoe Proizvodstvo* 1954, No. 1, 9–14.—Adding Mg as Mg-Si-Fe alloy for nodulizing graphite of cast iron kept at 1300–1600° for 10–100 min. produced a scum on the surface of the metal composed of the liquation products carrying with them most of the S. When the cast iron was treated with the Mg alloy in the 1280–1490° range, reheated for 0–46 min. to 1160–1590°, and then held for 15–45 min. at the *t*°, the original S content of 0.120–0.196% dropped after the modifying treatment by 81–94% and after heating and holding by 54–90%. The desulfurizing action of Mg drops with the *t*° becoming particularly low on heating to above 1450°. Time of holding reduces the residual Mg content to traces quite rapidly and globular graphite changes to lamellar in about 26 min. Many figures illustrate the paper. J. D. Gat

Vashchenko, K. I.

Phosphorus in magnesium-bearing iron. K. I. Vashchenko and L. Soffoni. Liteinoe Proizvodstvo 1955, No. 7, 18-19.—Irons containing C 3.0–3.4, Si 2.40–2.85, Mn 0.6–0.7, S 0.023–0.035% were alloyed with 0.08–0.2% P, modified at 1420–1450° by adding 0.2% Mg as a 15–85% mixt. of Mg chips and 85% FeSi, cast into wedges in green and dry molds, heat-treated for ferritic and pearlitic matrix, and tested for mech. properties, expansion characteristics, and crit. points. They were compared with those of gray iron having the same compn. In ferritic irons, the tensile strength increases very slightly up to 0.30% P and then decreases, ductility drops sharply in the 0.18–0.26% P range, impact strength is reduced rapidly to practically nothing up to 0.30% P, while compressive strength increases with higher P. In pearlitic irons 0.0% P reduces tensile strength by 35% as compared with 8% for ferritic irons, while their elongation and impact strength are less affected than in ferritic. Holding P at 0.16% and at 0.20% in nodulized ferritic and pearlitic irons, resp., is recommended. Increasing P suppresses the length of the plateau of the eutectic transformation on the cooling curves of nodulized iron more than it does that of gray iron and increases its fluidity more than of gray iron. Original expansion of iron grows with P, being more pronounced in ferritic nodulized iron. In gray iron P has practically no effect on expansion. Its greater percentage leads to higher internal stresses. J. D. Ger



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VASHCHENKO, K.I.

Category : USSR/Solid State Physics - Phase Transformation in Solid Bodies E-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3831

Author : Vashchenko, K.I., Golovan', N.A., Todorov, R.P.
Title : Form and Structure of Graphite in Cast Iron Treated with Magnesium

Orig Pub : Liteynoye proiz-vo, 1956, No 3, 19-24

Abstract : The article contains an analysis of the existing ideas concerning the mechanism of formation in the growth of graphite in cast iron treated with magnesium, and also the results of the authors' own investigations. Three possible schemes are described for the growth of graphite segregations in cast iron treated with magnesium. The form and structure of the graphite segregations vary with the conditions of the graphite formation and with the content of magnesium in the cast iron. If the magnesium content is 0.04 -- 0.5%, the graphite segregations have a round form and a sectorial structure. Magnesium is contained in the cast iron mostly in the form of oxides and sulfides.

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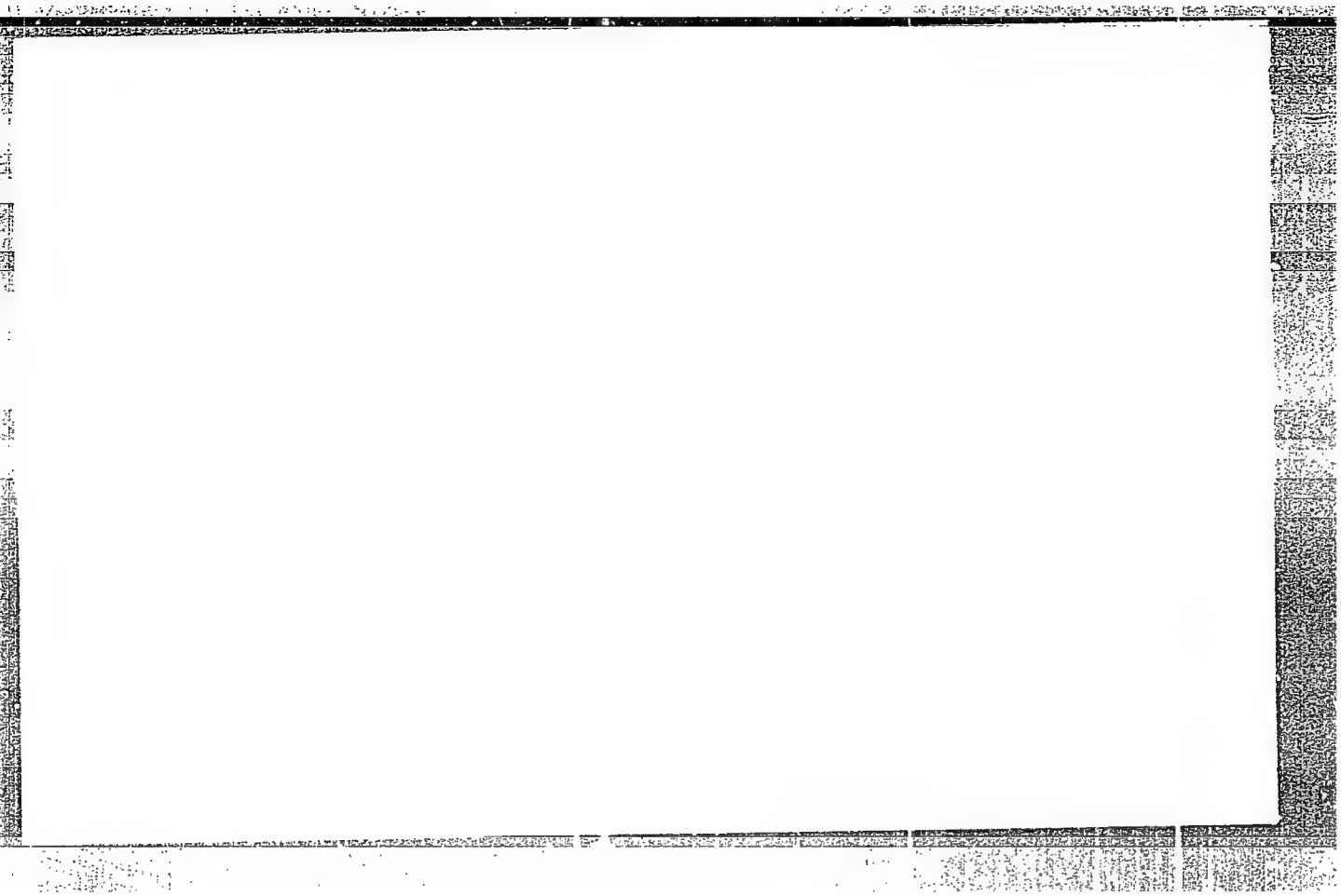

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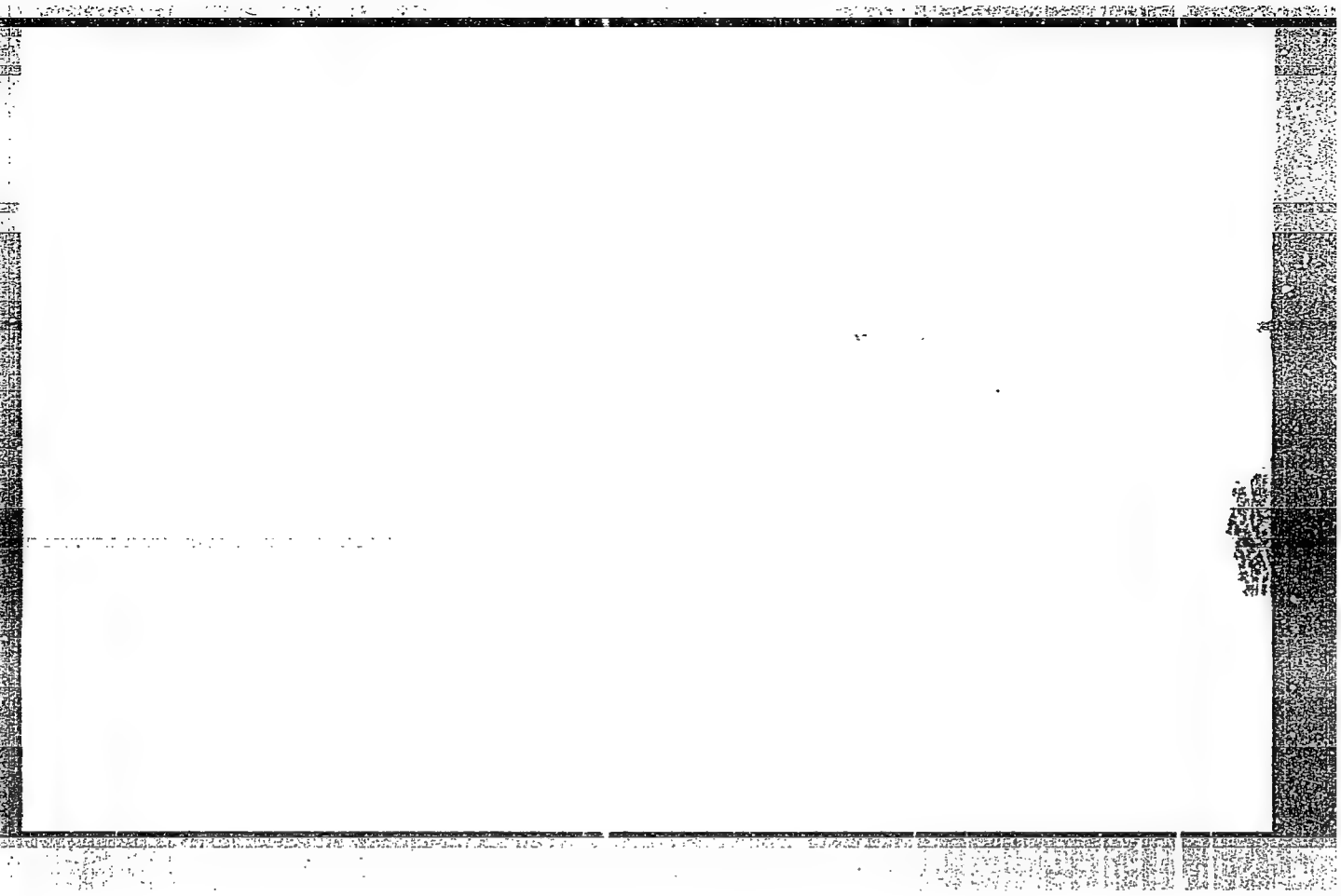
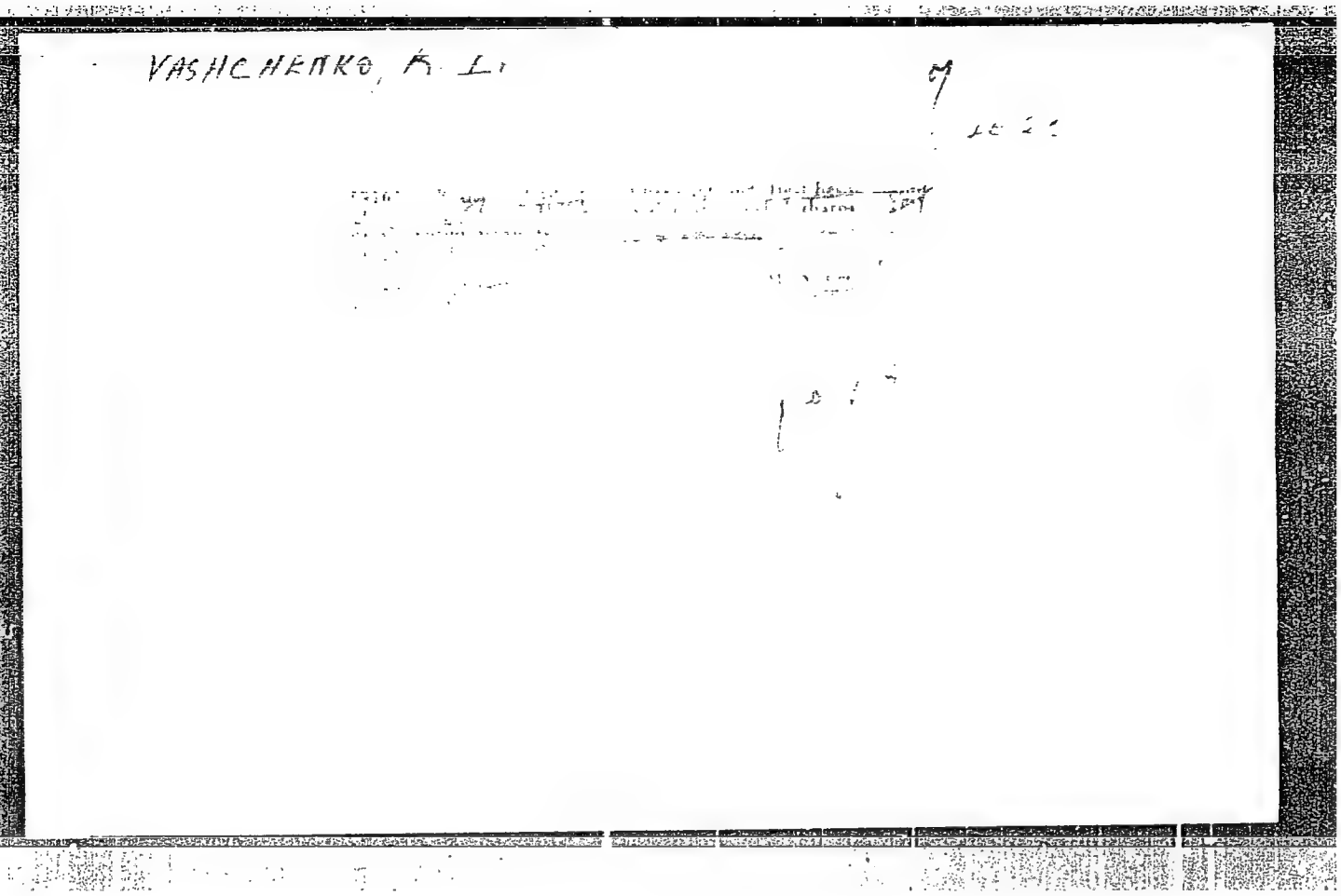


VASHCHENKO, Konstantin Il'ich; SOFRONI, Laurentsio; IVANOV, D.P., kandidat tekhnicheskikh nauk, retsenzent; SERDYUK, V.K., inzhener, redaktor izdatel'stva; RUDENSKIY, Ya.V., tekhnicheskiy redaktor

[Magnesium cast iron] Magnievyi chugun. Kiev, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 421 p. (MLRA 10:5)
(Cast iron)

VASHCHENKO, K.I.; SOFRONI, L.M.

Reply to K.P. Bunin, IA.N.Malinoekha, IU.N.Taran. Lit.proizv. no.1:24-27 Ja '57. (MIRA 10:3)
(Cast iron--Metallography) (Magnesium alloys--Metallography)



SOV/137-59-1-1273

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 172 (USSR)

AUTHORS: Vashchenko, K. I., Rostovtsev, L. I

TITLE: New Corrosion-resistant High-chromium Alloys for Casting (Novyye korrozionnostoykiye vysokokhromistyye splavy dlya otlivok)

PERIODICAL: Sb. statey Vses. n.-i. i konstrukt. in-t khim mashinostr., 1957, Vol 23, pp 14-37

ABSTRACT: The corrosion resistance of specimens and components was investigated in a concentrated 67% HNO_3 solution, in boiling 25% and 5% HNO_3 solutions, in a 93% H_2SO_4 solution, and in a 50% CH_3COOH solution; mechanical properties (σ_b, δ, and a_k), microstructure and fluidity of cast Cr- steels of the types 20Kh14L, 25Kh18L, 30Kh20L, and Kh28 were also investigated; this included steels containing additions of Cu (up to 1.5%) and Ti (up to 0.32%). It was established that an increase in Cr content beyond 23% (at 0.35% C) produces only a slight increase in the corrosion resistance of the metal in an HNO_3 solution. Addition of Cu and Ti did not have any effect. The new alloys 25Kh18L and 30Kh20L, which possess better casting and mechanical properties than Kh28 steel, are

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New Corrosion-resistant High-chromium Alloys for Casting

recommended for operations involving contact with HNO_3. The mechanical properties of the new alloys (without heat treatment) are as follows: σ_b 40-45 kg/mm^2; δ 1.0-2.0%; a_k 0.25-0.8 kgm/cm^2; H_B 179-197. Bibliography: 6 references.

T. F.

Card 2/2

VASHCHENKO, K.I., otv.red.; ARTAMONOV, A.Ya.,red.; ZASLAVSKIY, S.Sh.,red.; POLYAK, B.V., red.; SERDYUK, V.K., inzh., red.; RUDENSKIY, Ya.V., tekhn.red.

[Progressive founding technology] Peredovaia tekhnologiia liteinogo proizvodstva. Kiev, Gos. nauchno-tekhn.izd-vo mashinostroil lit-ry, 1958. 152 p. (MIRA 12:1)

1. Nauchno-tekhnicheskoye obshchestvo mashinostroitel'noy promyshlennosti.
(Founding)

Distr: 4E4j/4E2c/4F1/
4E4f

Y Shrinkage, shrinkage cavities, and surface contraction of nodulized iron / K. I. Vishchenko, R. P. Tikhonov, and V. V. Zhukhovitskii. *Liteinoe Proizvodstvo*, 1956, No. 2, 14–20.—Two series of heats, one with 1.9% Al and 4.7% Si and the other with 2% Al and 4.8% Si, were treated with a 20% Mg–80% Si alloy to bring Mg up to 0.10% without employing modification with FeSi. Up to 0.020% Mg does not effect either shrinkage or nodulization. With a higher Mg content shrinkage is reduced, reaching a min. when C is completely spheroidized and shrinkage reduced from 1.3–1.2 to 0.4–0.3%. Still higher Mg causes ledebourite formation and a sharp shrinkage increase. Higher Si slows the reduction of shrinkage and is more effective when added to the ladle. Addn. of Mg increases the preshrinkage expansion up to 1.45%, shifting it towards higher Si contents. The effect of Si added to a 0.03% Mg iron is shown in a diagram. Sensitivity of Mg irons to structural changes causes its shrinkage characteristics to very widely. The vol. of shrinkage cavities increases with Mg and varies between 2.7 and 10.4%, being larger in low-Si specimens; it is inversely proportional to the degree of nodulization. The use of quartz capillaries and Hg manometer showed the building of vacuum in the shrinkage cavities which reached occasionally 280 mm. Surface contraction was detd. by casting bars with rectangular cross section, measuring their free longitudinal contraction, depth of side contraction, and the vacuum in the shrinkage cavity, the effect of which is felt until the thickness of the skin formed can stand atm. pressure. Gray iron does not show either contraction or cavity formation until later. With the same Mg content, the amt. of contraction is a function of Si content.

J. D. Cat

5
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1/1

VASHCHENKO, K.I.; GOLOVAN', N.A.

Composition and structure of decarbonized and transition zones in annealed cast iron. Lit. proizv. no.3:16-20 Mr '58. (MIRA 11:4)

(Cast iron--Metallography)

VASHCHENKO, K.I.

SOV/128-59-3-16/31

18(7).

AUTHOR: Vashchenko, K.I., Doctor of Engineering; Todorov, R.P. and Koshunik, G.I., Engineers

TITLE: Formation of Graphite in Grey Cast Iron

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 3, pp 34-38 (USSR)

ABSTRACT: Much has been written in technical papers about the technique of spheroidal graphite forming in cast iron. The technical science has established that certain steps of graphite formation are still not clarified and not yet examined. Especially as the properties of liquid grey cast iron and the influence of ferrite-carbon-silicon are unsatisfactorily studied. At the same time the different opinions of the various research scientists about the formation of speroidal graphite are marked by the lack of a basic methodology of the research work. While researching on the process of crystallization and graphite formation in grey cast iron a difference is made between manganese iron and sulphuric iron. (Reference is made at this point of

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Formation of Graphite in Grey Cast Iron

the article to 4 publications of Soviet authors). It is evident that by annealing and cooling off of the material the theory of heat treatment and hardening is closely connected with the casting properties of grey cast iron. There exist three theories about the formation of spheroidal graphite nodules: a) formation of nodular graphite as a result of the decomposition of cementite; b) immediate or direct crystallization; c) separation of graphite nodules from austenite. A large number of scientists does not exclude any of these three theories, but voices the opinion, that these theories support one the other. The question is still open and requires further research work. Bunin, K.P., using the papers of the English authors(Hughes, J., Journ. Res. Div., Res. Reps. Nr 399, Nr 5, 1954, Gittus, J., Nr 400, 1955, and Foundry Prod. Journal 101, 1956, Nr 2,075) made his experiments with castings of 50 mm in diameter and of 200 mm in length. The

Formation of Graphite in Grey Cast Iron

results gained are published in this paper. Conclusion: During the separation of flake type graphite the flakes are formed during the starting period of the solidification. Spheroidal or nodule type graphite is separated during the whole solidification time. The authors of this paper do not accept this theory. They have made experiments of their own, according to which the expansion of the metal is a result of the graphite formation determined by the speed of chilling. An increase of the magnesium contents has the same influence The maximum contents of magnesium depends on the velocity of the cooling period and on the amount of silicon. Experiments have proven that the formation of flake type graphite and of spheroidal type graphite happens in different ways. It is not stipulated by the solidification process. There are 6 tables, 11 graphs, 3 micro-photographs and 18 references, 14 of which are Soviet and 4 English

18(5) SOV/128-59-4-11/27

AUTHORS: Vashchenko, K.I., Doctor of Technical Sciences, Todorov, R.P., Candidate of Technical Sciences, and Koshovnik, G.I., Engineer

TITLE: Distribution of Silicon Between Phases During the Annealing of Magnesium Iron

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 4, pp 20-23 (USSR)

ABSTRACT: It is known that the distribution of silicon between phases is uneven in malleable cast iron. Analyzing the phases, it was found, that the chief portion of the silicon is dissolved in the ferrite and austenite (under high temperatures). In the cementite only a hundredth part of one percent of silicon was found. The uneven distribution of silicon highly complicates the mechanism of the annealing process of the malleable cast iron, and renders more difficult the homogenizing of the metallic die, for which the diffusion of the silicon is most important. The diffusion of silicon in austenite is a relatively slow process, and it can be assumed, that the homogenizing process,

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Distribution of Silicon Between Phases During the Annealing of Magnesium Iron

while it is dependent on the disintegration speed of the austenite, coincides with the annealing or even lags behind it. The coincidence of both processes is possible only with a sufficiently low percentage of silicon or if the annealing is not too extensive. If the percentage of Si in normal magnesium iron is raised, the annealing proceeds quickly and the homogenizing remains. The following part of the article mainly studies the micro-hardness of austenite and perlite. The uneven distribution of the silicon especially influences the mechanism of the second phase in the annealing process. As a result, the annealing of the cementite in the perlite becomes irregular, too. If the distribution of silicon in the austenite (or perlite) is even, the perlite bordering the graphite is disintegrated first. The ferrite linings, which are formed, enlarge continuously, until all the perlite is dissolved. The uneven distribution of the silicon between the phases, and the homogenizing

Distribution of Silicon Between Phases During the Annealing of Magnesium Iron

taking place during the annealing are of great practical importance. The plasticity of the ferrite is highly dependent on the duration of the first annealing phase. The more completely the austenite is homogenized, the higher will be the plasticity of the ferrite. The second phase was in all cases completed within 5 hrs and under 740°C. To attain a good plasticity the annealing must be guarantee the homogenization of the metal die. There are 2 tables, 4 graphs, 2 diagrams, 8 photographs and 2 references, 1 of which is English and 1 Soviet.

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77145
SOV/148-59-9-15/22

AUTHORS: Vashchenko, K. I. (Professor, Doctor of Technical Sciences), Rudoy, A. P. (Engineer)

TITLE: Method of Measuring Surface Tension of Cast Iron

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, 1959, Nr 9, pp 133-139 (USSR)

ABSTRACT: In reviewing earlier work on the above subject, the authors mention I. A. Andreyev, V. E. Vasil'yev, V. S. Barzilovich, A. M. Levin, A. Ya. Khrapov, and P. V. Chernobrovkin. The authors state that the method of determining the maximum pressure in gas bubbles for the purpose of measuring the surface tensions of metals has found wide application. However, for a more accurate determination of the radius of the bubble blown on the inside diameter of the capillary tube, they suggest taking into account changes in the angle of contact (wetting) between the metal and the capillary material. This angle dependends to a large

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extent on the temperature and composition of the hot metal. Another possibility is the utilization of the value of the second maximum on the pressure curve and the outside diameter of the tube. In order to establish both pressure maxima simultaneously, a low-inertia manometer and a measuring system (consisting of manometer pickup, connection tube, and capillary tube) are used. For simplification the authors refer to the maximum pressure in the bubble on the inside of the capillary tube (first maximum) as the "inner maximum P_i" and to the maximum pressure in the bubble formed outside the capillary tube (second maximum) as "outer maximum P_a". Since liquid manometers are unsuitable for an accurate recording of rapidly changing pressures, the authors designed a condenser micromanometer for continuous recording of the pressure throughout the test. The device is based on a differential diagram so as to decrease errors caused by temperature changes of the ambient medium and by the parameters of the manometer unit. Automatic electronic potentiometer EPP-09 with a carriage running over the scale in 2.5 sec

serves as a recorder. With the electromotive force at zero the arrow is set at scale graduation 600°. The installation for determination of surface tension of molten metals is shown in Fig. 2.

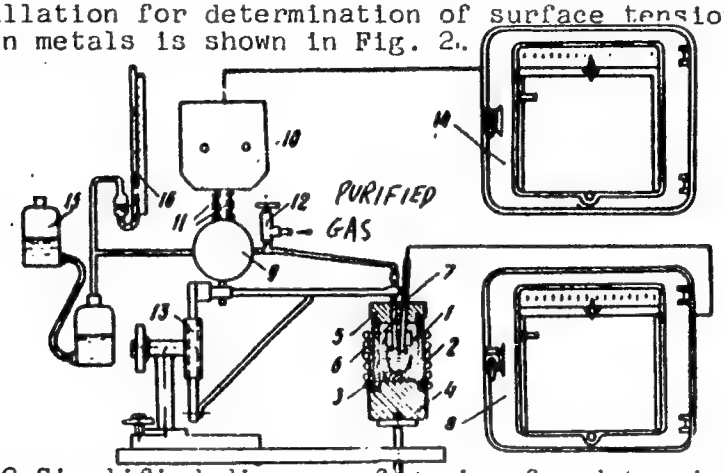

Fig. 2 Simplified diagram of device for determination of surface tension of molten metals: (1) corundum crucible; (2) graphite screen; (3) ceramic tube; (4) support; (5) lid with apertures for (6) capillary tube and (7) thermocouple; (8) electronic potentiometer;

(9) condenser pickup; (10) manomerer; (11) cable; (12) cock; (13) support; (14) potentiometer; (15) glass; (16) water manometer.

In heating and cooling the metal the potentiometers simultaneously record the internal pressure of the bubbles and the temperature of the metal. Temperatures of cast iron at which the first pressure maximum equals the second depend on wetting conditions and the interrelation between the capillary tube dimensions. For instance, with increased capillary wall thickness, the temperature range tends to increase. The authors used quartz tubes with 6.20 mm OD and 4.40 mm ID. The composition of the cast iron was: C, 3.60%; Si, 2.50%; Mn, 0.70%; P, 0.20%; and S, 0.025% Fig. 5 shows the results of continuous recording of temperatures and pressures in the bubble blown in cast iron. The quartz capillary tube used in this test had 4.98 mm OD and 3.48 mm ID. Correction for the depth of immersion of the capillary tube was made.

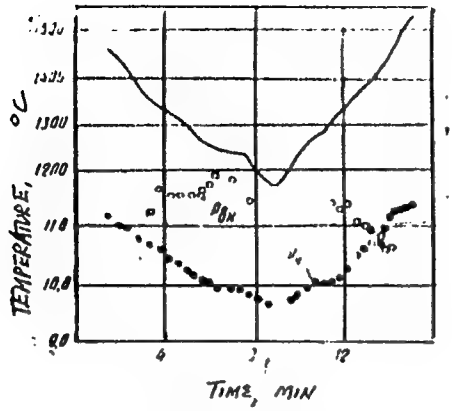

Fig. 5. Effect of temperatures on changes in the inner and o outer maxima of pressure in bubbles blown in cast iron.

Results of calculating the surface tension of cast iron σ according to Eq. (1) (where $R_o = r_o$, i.e., radius of bubble equals outside radius of tube), and the angle of wetting Θ according to Eq. (4) with corrections for spherical imperfection (Eq. (3)), and by means of data shown in Fig. 5, are illustrated in Fig. 6.

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$$\sigma = \frac{P_o r_o}{2} g \qquad (1)$$

$$\left(1 - \frac{2}{3}\frac{R_1}{\rho} - \frac{1}{6}\frac{R^2_1}{\rho^2}\right) \qquad (3)$$

$$\sin\theta = \frac{P_x r_x}{P_0 r_0} \qquad (4)$$

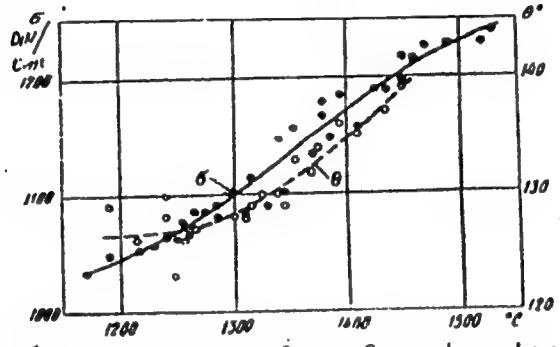

Fig. 6. Dependence of surface tension of cast iron and wetting angle between cast iron and quartz (angle of contact) on temperatures.

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Method of Measuring Surface Tension of Cast Iron

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SOV/148-59-9-15/22

walled tubes are suitable, allowing the use of aluminum and beryllium oxide tubes the life of which is considerably longer than that of quartz tubes. There are 3 figures; and 8 references, 7 Soviet, 1 German.

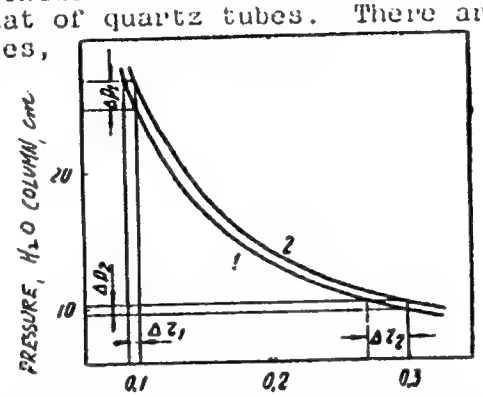

Fig. 8. Dependence between maximum pressure in the bubble and outside radius of the tube for surface tension of metal (1) 1,200 and (2) 1,300 din/cm.

ASSOCIATION: Kiev Polytechnic Institute (Kievskiy politekhnicheskiy institut)

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Method of Measuring Surface Tension of Cast Iron

77145
SOV/148-59-9-15/22

SUBMITTED: January 6, 1959

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PHASE I BOOK EXPLOITATION SOV/4922

Vashchenko, Konstantin Il'ich, and Laurentsio Sofroni

Magniyevyy chugun (Magnesium Cast Iron) 2d ed., and rev. enl. Moscow, Mashgiz, 1960. 486 p. 5,500 copies printed.

Reviewer: R. I. Anpilogov, Engineer; Ed.: Yu. P. Pilinenko; Chief Ed. Mashgiz (Southern Dept.): V. K. Serdyuk, Engineer.

PURPOSE: This book is intended for engineers at machine-building plants and for workers at scientific establishments.

COVERAGE: The book contains information on the chemical composition, properties, manufacture, and use of castings made of high-strength cast iron modified by the addition of magnesium. This cast iron is said to be a new constructional material. Data were obtained from investigations carried out by the authors and from the literature in the field. Particular attention is given to methods of manufacturing cast iron and to the theoretical principles of graphitizing and modification. Practical suggestions are made regarding the selection of proper methods of manufacturing high-strength iron castings, depending upon the scale of production and purpose of manufactured parts. No personalities

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are mentioned. There are 526 references, Soviet and non-Soviet.

TABLE OF CONTENTS:

Annealing conditions of...

pure magnesium. Tensile strength and elongation were tested by the Gagarin method. The chemical composition of investigated irons is given in Table 1. Annealing was carried out in two stages, during the first stage the time of annealing varied whereas temperature was kept at 1,050°C and during the second stage at 840°C for 8 hours. The specimens tested after annealing had a ferritic structure containing spheroidal graphite. The obtained results are shown in Figure 1, a - d. Prolonged annealing definitely improved the elongation and impact values and reduced the strength and hardness of castings. The temperature of the first high-temperature stage should be chosen very carefully. The redistribution of silicon during annealing and its effect on the plastic properties was also observed on wrought iron. To ensure favorable plastic properties of castings the homogenization of metal must take place during the first annealing phase in addition to a complete graphitization. The second phase should be determined by the time required for the decomposition of pearlite. A further prolongation of the annealing time does not improve the mechanical properties. There are 4 figures, 2 tables, 5 Soviet-bloc and 1 non-Soviet-bloc references.

S/128/60/000/005/002/004
A104/A133

Annealing conditions of...

Table 1:

(1) heat series,
(2) No. of heat,
(3) chemical composition in %.

1) Серия плавок	2) № плавок	3) Химический состав в %, C	Si	Mn	P	S	Mg
A	1	2,98	1,55	0,54	0,090	0,008	0,045
	2	3,45	1,59	0,56	0,085	0,011	0,051
	3	3,35	1,63	0,45	0,090	0,007	0,041
	4	3,40	1,49	0,62	0,100	0,009	0,029
Б	1	3,30	2,10	0,78	0,053	0,014	0,057
	2	3,23	2,17	0,51	0,058	0,014	0,051
	3	3,30	2,00	0,46	0,060	0,008	0,046
	4	2,15	0,057	0,050	0,010	0,010	0,046
	5	3,37	1,91	0,54	0,045	0,009	0,052
B	1	3,21	2,40	0,60	0,053	0,010	0,064
	2	3,10	2,59	0,63	0,060	0,014	0,039
	3	3,17	2,64	0,45	0,045	0,007	0,053
	4	3,35	2,60	0,50	0,057	0,011	0,075
Г	1	3,11	2,91	0,67	0,063	0,017	0,056
	2	3,05	3,18	0,63	0,053	0,008	0,055
	3	3,19	2,99	0,46	0,103	0,020	0,091

Table 1

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S/128/60/000/005/002/004
A104/A133

Annealing conditions of...

Fig. 1

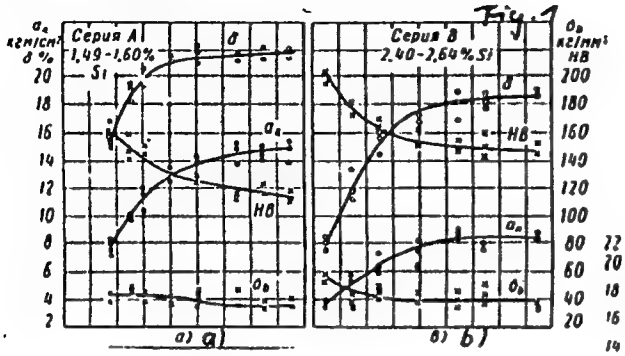
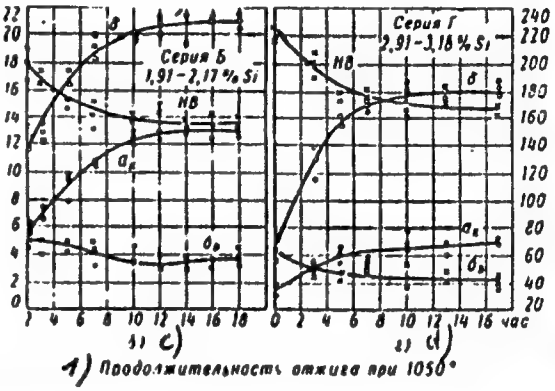


Figure 1:

(1) duration of annealing at 1,050°C.



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S/032/60/036/03/038/064
B010/B117

AUTHORS: Rudoy, A. P., Vashchenko, K. I.

TITLE: A Device to Determine the Surface Tension of Metals

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 36, Nr 3, pp 349-350 (USSR)

TEXT: More reliable results on the surface tension of metals determined from maximum pressure in a bubble are obtained if there are two maxima on the pressure-change curve, which correspond to the position of the bubble on the inner or outer cross section of the capillary tube. This is attained when low-inertia gages are used, and the volume of the measuring system is only some cubic centimeters. Based on this, a device (Fig 1) used to measure surface tension has been designed. The pressure is measured with a capacitor gage which is directly connected to the capillary tube. The capacitor is connected with two generators with a frequency of 1600 kc/s. As a recording unit, a somewhat modified potentiometer is used. The pressure gage (Fig 2) consists of two capacitors made of membranes and disks with a capacity change taking place if pressure is changed. If two microgages are applied, two maxima can be recorded during the formation of bubbles. The surface tension is calculated from an equation (1) with more accurate results being obtained from the second maximum. From the first maximum and the measured value obtained from the second maximum,

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A Device to Determine the Surface Tension of Metals S/032/60/036/03/038/064
B010/B117

the wetting angle can be calculated. There are 4 figures and 2 Soviet references.

ASSOCIATION: Kiyevskiy politekhnicheskiy institut (Kiyev Polytechnic Institute)

Card 2/2

S/128/61/000/002/005/009
A054/A133

AUTHORS: Vashchenko, K.I.; Todorov, R.P.; Koshovnik, G.I.

TITLE: Phase distribution of nickel in white iron

PERIODICAL: Liteynoye proizvodstvo, no. 2, 1961, 25 - 26

TEXT: The distribution of nickel between cementite and ferrite was analyzed chemically. A 1HKCl + 0.5%-citric acid solution electrolyte (at room temperature and 0.02 A/cm^2 current density) were used The electrolysis should not exceed a maximum of 3 h, in order to prevent the decomposition of the cementite. The composition of the analyzed iron was: 2.3% C; 0.3% Si; 0.41% Mn; 0.045% P; 0.05 % S; and 1.9% Ni. The test data show that at high temperatures the greater part of nickel is dissolved in ferrite or austenite, whereas cementite contains only some hundreds of the nickel percentage. With the increase of the eutectic character of iron, the nickel content of cementite increases. This is due to the close bond of pearlite and cementite in ledeburite which impedes the total electrolytic separation of these phases. In ledeburite some isolated ferrite particles remain which increase the initial nickel content of cementite. Corresponding results were obtained with metallographic tests, based on the property of

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nickel to reduce the critical hardening rate of iron. In the tests iron containing 2.5% C, 0.35% Si, 0.5% Mn. 0.04% P, 0.055% S and 2% Ni was used in the form of wedge-shaped specimens (100 x 60 x 20 mm), the cross sections of which were cooled at various rates. The critical hardening rate of primary austenite is much higher than that of austenite entering the ledeburite structure. The quantitative aspect of nickel distribution between primary and eutectic austenite-tested by thermal analysis - proved that nickel lowers the temperature of eutectic transformation (1% Ni corresponds to a temperature drop of eutectic transformation of 30°C). It was also found that the crystals of primary austenite show a nonuniform micro-hardness which proves that micro-hardness and, consequently, nickel concentrations in the proximity of cementite is higher than in the other parts of austenite. From the tests it can be roughly assumed that the nickel content of primary austenite is equal to the nickel content of the liquid smelt, whereas in the eutectic austenite it is about twice as high. There are 3 figures, 2 tables and 3 Soviet-bloc references.

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Effect of carbon and silicon on the surface tension of cast iron. Izv.vys. uchab. zav.; chern. met. no.3:11-15 '61. (MIRA 14:3)

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(Surface tension)

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